

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE), and the Department of the Interior (DOI), represented by the National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS), have re-evaluated alternatives to restore Everglades National Park (ENP) by redistributing and providing additional flows of water into the Park through U.S. 41, Tamiami Trail.

After reviewing Congressional directives and targets, all previous reports, and previous and new alternatives and costs, the agencies recommend a plan consisting of two actions: 1) build a one-mile long bridge in the project area's eastern segment and 2) raise the headwater stage constraint in the L-29 Borrow Canal by one foot to eight and one half feet; which would require road mitigation on parts of U.S. Highway 41 in the action area, located between S-333 on the west and S-334 on the east. This Recommended Plan is called Alternative 3.2.2.a.

The Limited Reevaluation Report (LRR) Recommended Plan's total fully funded cost estimate, which includes escalation to the mid-point of construction, is **\$212 million**; its total first cost estimate (excluding escalation) is **\$205.3 million**. The LRR Recommended Plan would improve connectivity, reduce sharp flow velocity changes, and improve rainy season depth and duration which are hydrologic conditions needed to sustain slough vegetation in ENP. It would provide nearly double the hydrological and habitat benefits as lower cost alternatives and construction could begin in late Fiscal Year (FY) 2008. Since the bridge segment is part of the 2005 Revised General Reevaluation Report (RGRR) recommended plan, it would be compatible with anticipated Comprehensive Everglades Restoration Plan (CERP) stages of up to 9.7 feet. The LRR Recommended Plan would also be compatible with future changes anticipated under CERP, as the bridged segment would not require rebuilding. With the exception of the 10.7-mile bridge (Alternative 4.2.4) and the "Blue Shanty" (Alternatives 5.3 and 5.4), none of the other alternatives appeared capable of accommodating flows of 4,000 cubic feet per second (cfs). Although 4,000 cfs flows are only expected under infrequent, high rainfall events, flows of this magnitude are important to induce positive ecological response. These three alternatives capable of accommodating 4,000 cfs flows were eliminated from consideration due to cost.

Background. The Everglades National Park Protection and Expansion Act, December 1989, authorized the Secretary of the Army to improve water deliveries to ENP and to take steps to restore natural hydrologic conditions to the extent practicable. The General Design Memorandum (GDM) called for in the Act was completed in June 1992. The 1992 GDM and Environmental Impact Statement (EIS) recommended transfer of water into the park from Water

Conservation Area (WCA)-3B to the L-29 Canal, and assumed that the existing culverts under Tamiami Trail (U.S. Highway 41) roadway would be adequate to convey the increased flows. Subsequent hydrologic analyses revealed that the higher stage in the L-29 Canal that would be required for the culverts to convey the increased flows could adversely affect the structure of Tamiami Trail and cause progressive road failure under infrequent storm conditions.

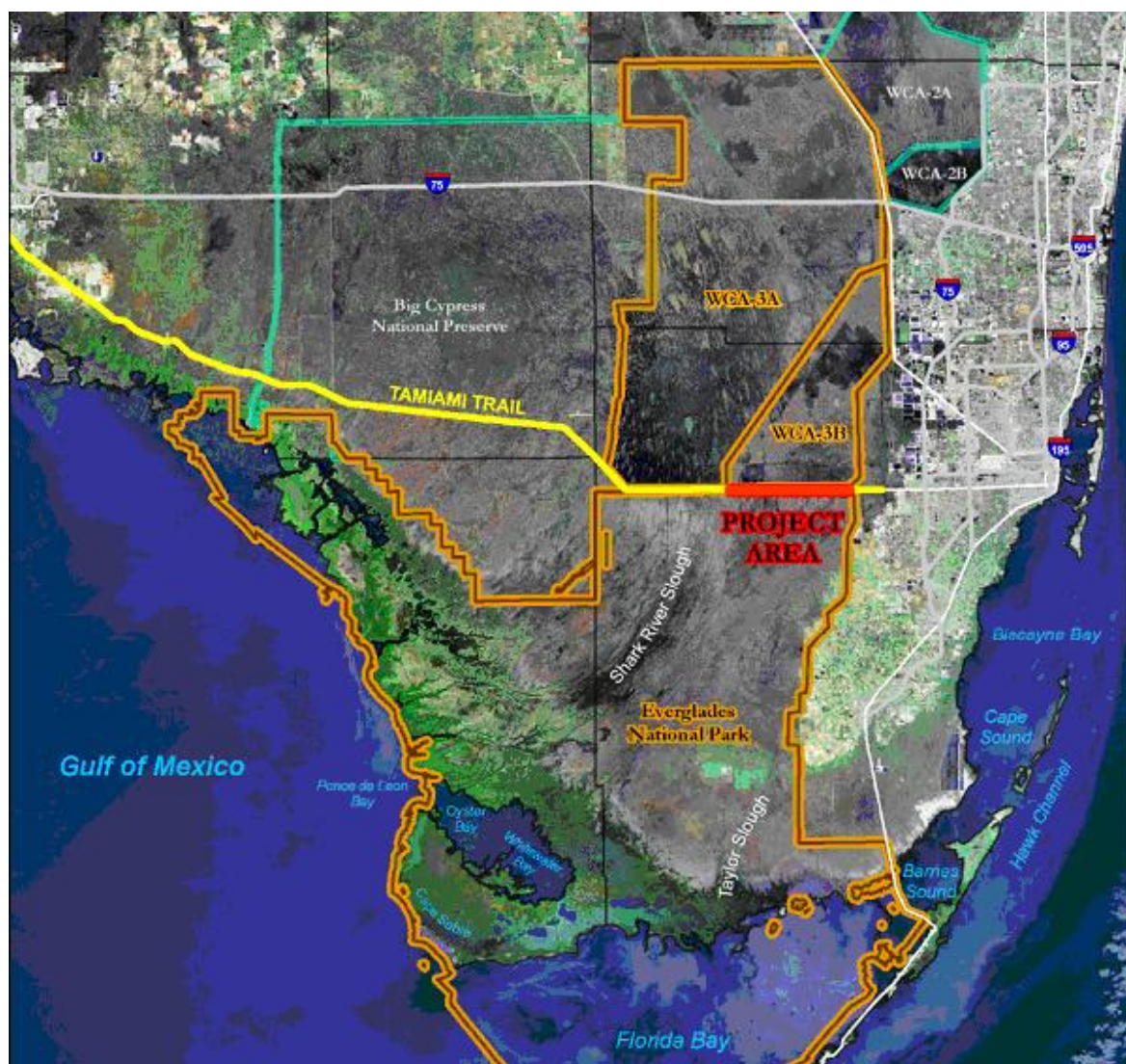


Figure ES-1. Project and Study Area Location

The Project area includes a 10.7 mile long section of Tamiami Trail.

Alternative means for water conveyance were first evaluated in a General Reevaluation Report and Supplemental Environmental Impact Statement (GRR/SEIS), the final version of which was coordinated with the public in 2003. The 2003 Preferred Plan was a 3,000 foot bridge and a proposed agreement to

pay compensation to Florida Department of Transportation (FDOT) for a flowage easement along the unbridged portion of Tamiami Trail. State concerns regarding probable damage to Tamiami Trail were raised prior to, during and subsequent to the public and agency review of the final report, and the Final GRR/SEIS was withdrawn without a signed Record of Decision.

In 2005, a revision of the GRR examined additional alternatives. Ten alternatives, including no-action, were considered, including the previously considered 3,000 foot long bridge. All alternatives would have conveyed the increased flows associated with Modified Water Deliveries (MWD). All would have required removal of the roadway in the footprint of the bridges and the reconstruction, with an asphalt overlay, of the unbridged portion of the road.

The 2005 RGRR Alternatives were as follows:

- No-Action
- Alternative 9 3,000 foot long bridge
- Alternative 10 Four Mile long bridge in the central region of the project area
- Alternative 11 Four mile long bridge at the eastern end of the project area
- Alternative 12 Three mile long bridge
- Alternative 13 Two mile long bridge
- Alternative 14 Two mile long bridge at the western region of the project area and a one-mile long bridge at the eastern end
- Alternative 15 1.3 mile long bridge at the western region of the project area and a 0.7 mile long bridge at the eastern end
- Alternative 16 Three 3,000 foot long bridges
- Alternative 17 10.7 mile long elevated roadway within the existing right of way

All 2005 alternatives incorporated a design high water of 9.7 feet. Alternatives were evaluated by an interdisciplinary team based on their ability to meet targets for hydrologic and ecologic performance measures.

2005 RGRR Recommended Plan. The 2005 RGRR Recommended Plan was Alternative 14 (widen and raise road profile with two mile bridge west and one mile east, and reconstruct the remaining unbridged roadway). Total project cost was estimated at approximately \$144 million dollars. After public coordination of a Draft and Final GRR/SEIS, and consideration of all comments from agencies, stakeholders and the public, a Record of Decision selecting Alternative

14 was signed on January 25, 2006 and the proposed project was sent to Congress for consideration in the FY 2007 budget.

Congressional Consideration of 2005 RGRR Plan; 2007 “Managers’ Language”. When the 2005 RGRR plan was approved in 2006 by the Assistant Secretary of the Army for Civil Works, early Pre-construction Engineering and Design work led to refinement of the total cost estimates for Alternative 14. By the time Congress considered the Tamiami Trail Modifications for inclusion into the authorizing language in the 2007 Water Resources Development Act (WRDA) in early summer of 2007, revised and more detailed cost estimates for the plan, including a newly required cost risk analysis, put the cost at **\$305 million**. Congressional managers developing WRDA 2007 expressed dismay at the relatively rapid cost increase and high cost of the 2005 RGRR plan; and directed proponents in the DOI and USACE to re-evaluate the 2005 Plan and develop less costly alternatives. That direction is the basis for this LRR. The cooperating agencies were directed to:

“Re-examine options to modify the water deliveries to the Park. However, the managers also direct the Chief of Engineers to pursue immediate steps to increase flows to the Park of at least 1,400 cubic feet per second, without significantly increasing the risk of roadbed failure. Flows less than 1,400 cubic feet per second will not produce measurable benefits to the Park...”

“...The managers direct the Chief of Engineers to re-examine the prior reports and environmental documentation associated with modifying water deliveries to the Park prepared under the 1989 Act, and to evaluate the practicable alternatives for increasing the flow of water under the highway and into the Park. The recommendations...shall, to the extent practicable, take steps to restore the natural hydrological conditions within the Park. The managers direct that the flows to the Park have a minimum target of 4,000 cubic feet per second so as to address the restoration envisioned in the 1989 Act.”

This LRR re-evaluated the most likely cost of Alternative 14, as directed. After applying cost-risk considerations as required by USACE planning guidance implemented beginning in September 2007, the current estimated cost of RGRR Alternative 14 (Alt 4.2.3 in the LRR) is **\$430 million**.

The team also examined 27 options including no-action and the 2005 RGRR plan. The actions included reinforcing the road only (in six-inch increments up to 9.7 feet), doubling the number of culverts alone, adding a bridge only (at two different locations), and various combinations of road reinforcement and culverts or road reinforcement and bridges. Alternatives from the RGRR that were more costly than Alternative 14 from the RGRR were not re-evaluated, as the team felt that they would be even more expensive than the previously selected plan.

Each alternative was examined for hydrologic performance (flow volume and flow velocity) and ecologic performance. They were compared against the flow targets set by the Managers' language, and against cost constraints. Finally, they were evaluated in terms of how quickly construction could commence.

The team's analysis quickly eliminated alternatives focused solely on road reinforcement, as they did not provide better velocity distributions of flow than under no-action. Likewise, culvert-only alternatives were eliminated for similarly poor performance, and were less efficient than bridge alternatives (at each stage constraint) in increasing average and peak flow delivery to the Park. Four final alternatives and no-action were carried forward for evaluation according to the USACE's criteria of completeness, efficiency, effectiveness and acceptability. All alternatives retained for detailed screening provided significant improvements in terms of hydrologic and ecological performance. The best performing and most cost-effective plan is Alternative 3.2.2.a, which combines a one-mile bridge in the eastern location with raising the stage constraint at L-29 by one foot, to eight and one half feet, and providing road mitigation to this level. Alternative 3.2.2a provides flow benefits to meet the Managers' language, nearly doubles the ecosystem performance outputs compared to no action, and is forward compatible with future CERP improvements. If approved by Congress, construction could commence on Alternative 3.2.2a with a projected completion date in late 2011. The total fully funded cost estimate for Alternative 3.2.2a, the Recommended Plan, is **\$212 million**. This estimate includes risk and uncertainties at the 90 percent confidence level, as well as expected cost escalation to the midpoint of construction. This confidence indicates that there is a 90 percent chance the final cost for this project (at FY-08 pricing levels) would be equal to **or less** than this estimate.

This page intentionally left blank